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MEETING SUMMARY
Technical Oversight Committee (TOC):
Analysis of Refuge Phosphorus Data and Related Matters
South Florida Water Management District
3301 Gun Club Road, West Palm Beach, FL 33406
Thursday, July 24, 2003

Attendees:

Garth Redfield, TOC Chair and Agency Rep., SFWMD
Bill Baxter, TOC Agency Rep., USACE
Frank Nearhoof, TOC Agency Rep, FDEP
Mike Waldon, TOC Agency Rep, USFWS
Nick Aumen, TOC Agency Rep, NPS/ENP

Ken Weaver, FDEP
Carlos Adorisio (SFWMD)
Peter Besrutschko (USACE)
Ron Bearzotti (SFWMD)
Kelly Brooks (Miccosukee Tribe)
Kirk Burns (SFWMD)
Kalani Cairns (FWS)
Bahram Charkhian (SFWMD)
Linda Davis (SFWMD)
Charles A. DeMonaco (FDEP)
Dennis Duke (USACE)
Gene Duncan (Miccosukee Tribe)
Rebecca Elliott (FDACS)
James Erskine (Miccosukee Tribe)
Nenad Iricanin SFWMD)
Jennifer Jorge (SFWMD)
Bob Kadlec (for DOI)
Don Kent (CWF)
Bob King (Palm Beach Post)
Joan Lawrence (DOI)
Charles Lee (Audubon)
Jason Lichtstein (Gunster Yoakley)
Joette Lorion (Miccosukee Tribe)
Paul McGinnes (SFWMD)
Loren M. Mason (USACE)
Damon Meiers (SFWMD)
Linda McCarthy (FDACS)
Ron Smola (SFWMD)
David Struve (SFWMD)
Kimberley Taplin (USACE)
Bill Walker (for DOI)
Jeff Ward (SCGC)
Mike Zimmerman (NPS/ENP)
Gary Goforth (SFWMD)
Trudy Morris (SFWMD)

Introductory Comments: Garth Redfield, Chair, Technical Oversight Committee (TOC) called the meeting to order at 10:05 a.m. He indicated that this is a working meeting to discuss issues related to phosphorus levels in the A.R.M. Loxahatchee National Wildlife Refuge. The Chair reviewed the agenda and no changes were requested to the agenda. The agenda is **Attachment A.** All attendees introduced themselves.

1. Discussion of Exceedances of Interim Limits in the Refuge. The first topic discussed by the TOC centered on District and Federal data analyses and interpretation of Refuge phosphorus data and interpretation. The overall goal was to clarify factors involved in Refuge geomean TP levels to allow the melding of existing draft letters to the principals.

1.a. Presentation by District on Exceedances. Garth Redfield presented an analysis of factors contributing to exceedances in the Refuge covering six topics. His Powerpoint slides are in **Attachment B**, and highlights follow.

P response pattern across the Refuge. TP values are lower in both absolute terms and relative to the calculated monthly geomean interim level. This finding is inconsistent with external loading as a primary driver.
Conservative substances as tracers. There was no visible relationship between conductivity geomeans and TP geomeans since 1999. Conductivities near the canal do not show any link between conductance and TP levels. This observation is not expected if significant inputs of TP are being transported by high conductivity water.
Signs of enrichment in the compliance data. For individual stations or groups of stations, there is no evident positive trend in TP levels that would suggest marsh enrichment. Even short-term enrichment is not seen in the compliance data and data on external loading.
Conclusions on exceedances. Overall, evidence on the role of external loading is not easily interpreted, and close examination of the paper written by Walker and Kadlec (2003) reveals low predictive capability for external loading as a major driver in the exceedances and several alternative explanations for the levels seen. Improving water quality in the Refuge is a far better use of time than more deliberation of data uncertainties and competing interpretations.
Draft recommendations. Key recommendations by Redfield et al. include: expedite the completion of STA-1E; enhance STAs as a high priority; review guidelines under WSE decision making for water movement; request modeling for the Refuge and do additional modeling and data analysis on the Refuge.

1.b. Discussion of District Presentation

There were questions on the following: the penetration of the interior of the marshes, water levels in the Refuge, the regulation schedule of the Refuge, and calculated TP limits of the Settlement Agreement. Discussion also concerned whether the July exceedance was due to "error or extraordinary natural phenomenon" or external loading as explored in the Walker/Kadlec paper (2003).

It was suggested that more detailed data should be collected on the Refuge, and further modeling is needed. There were comments on geomean conductivities versus total phosphorous geomeans, with suggestions for improving the data interpretation. Various aspects of modeling were mentioned, and suggestions were made on types of modeling.

1.c. Draft combined letter to the Prinicpals - Garth Redfield, SFWMD.

Redfield provided a draft letter to the Principals entitled, "Working Draft for TOC Review and Revision," dated July 24, 2003 **(Attachment C)**. He asked the attendees to review it, and then the group would discuss all aspects. It was "From" TOC representatives and "To" the Principals of the Settlement Agreement and summarized key issues.

2. Update on the Performance of STA-1W - Gary Goforth, SFWMD.

2.a. Presentation. Goforth presented background and updated performance information on the STA-1 West phosphorus dynamics in a formal presentation to the TOC **(Attachment D)**. The presentation provided specifics on the input of Lake Okeechobee water to the STA and its effects on STA performance and inputs to the Refuge.

More than 200,000 acre feet were added to inflows to STA-1W, for a total flow for 2003 of 472,000 acre feet. There were over 50 tonnes of phosphorus delivered from lake releases.

The STA removed 51 tonnes - about 31 tonnes from the lake. In February 2003, releases were terminated due to elevated phosphorus concentrations in discharge.

Compliance methodology allows an annual maximum of 75 parts per billion (ppb) and up to two consecutive years above 50 ppb; current water year level is 53 for STA-1W. Recovery of STA-1W continues, and we are still learning about large wetland systems.

2.b. Discussion

The role of high flows in the compliance methodology of 75 ppb was discussed. There was discussion on the fact that STA 1-E and STA-3/4 should not be run outside of their design perimeters, with the proviso that deviations could be made on a monthly basis, if required. A hydraulic loading proviso may need to be formalized by the TOC to supplement the tracking of TP loading.

Optimizing STA-1W loading and finding solutions to the lake release problem were discussed. Questions were also asked concerning the role of additional storage for STA-1E in reducing loading levels. The importance of STA design capacity and under-estimates of the hydraulic budget were also mentioned. The actual flows and hydraulic loads may be substantially different from original baselines.

3. Status Report on STA-1E Monitoring and Operational Plans and Water Quality Considerations - Peter Besrutschko and Dennis Duke, USACE.

3a. STA 1E PSTA Demonstration Project

A presentation on the STA-1E PSTA Demonstration Project was given by Peter Besrutschko **(Attachment 5)**. The demonstration PSTA can achieve 10 ppb over the short term that it has been operating. The calcareous periphyton mat can be established in 6-8 weeks; excess P will shift the periphyton community.

Discussion included questions on the following: how the measuring was done, mass balance, water budget evaluation, phosphorus lab testing, finding out where the phosphorus is going, and the length of time cells will run. There will be a future opportunity to ask more questions on this important matter.

3b. STA 1E Project Status

Dennis Duke updated the group on the STA-1 East project **(Attachment 5).** Progress on S-319 and S-362 was provided, along with a breakdown of project costs, now totaling $275,500,000. Seven contracts are underway to complete the project, which is designed for flood control, water supply, and water quality. This update was followed by a discussion of a conceptual plan to reach 10 ppb using emergent plants, SAV, and PSTA.

Discussion was centered around “funding challenges” in the USACE this year; options if it gets the phosphorus down to a level that is not meeting the 10 ppb; the Corp’s goal to create a final project that will allow the SFWMD to meet the requirements of the law; and getting PSTAs up and running. Redfield said this will again be an agenda item in the future.

Recess for Lunch – 1:10 pm

Reconvene at 1:45 pm

1. Return to Discussion of Exceedances of Interim Limits in the Refuge.

The TOC discussed issues of concern in the draft combined letter to the TOC Principals, particularly the recommendations for action on phosphorus control and related matters. The final consensus letter is **Attachment 6** to this summary.

After considerable discussion, the TOC arrived at the following items for inclusion in the letter and for immediate implementation:

A. Controlling Phosphorus Loads to the Refuge

1. Continue to develop and implement strategies to operate the STAs within their design range. That should include review of baseline hydrologic datasets used for STA design and updating to reflect current regional water management.
2. Review the long-term plan to determine whether additional measures are appropriate for optimizing phosphorus reduction measures. Implement such measures as necessary to achieve the long-term levels.
3. Refine operational strategies to minimize short-term peak loads to and from the STAs.
4. Review of regional water management decisions criteria affecting STA operations and performance.

B. Enhancing Monitoring of the Refuge

1. Design and implement an enhanced monitoring program to improve spatial and temporal understanding of factors related to phosphorus dynamics.

C. Modeling for the Refuge

1. Develop a water quality/hydrologic model for the Refuge with a phosphorus cycling component.
2. Evaluate issues associated with phosphorus loads and transports within the L-40 and L-7 canals.
3. Develop and track a simple phosphorus mass-balance for the Refuge.

Further discussion revolved around compliance issues, including the following: a definition of “extraordinary natural phenomena”; whether the exceedances should be interpreted as a violation; practical definition of “substantial evidence” and “extraordinary natural phenomena”; the length of the consensus letter; possible error in the model for the interim limits; actions that would be taken if there were a TOC determination of a violation; and the unique success of the aggressive phosphorus control system implemented by the District.

4. Additional Public Comments and Agenda or Action Items for the next TOC meeting on August 12, 2003.

There was discussion on the recommendations and how they should be presented to the principals.

- Nick Aumen made a motion to adopt these recommendations in the form of a letter to the principals, with the heading from the TOC, and to forward the letter to the principals. The motion was seconded by Garth Redfield, and it passed unanimously.

In addition to the previously approved August 12 meeting date, the group accepted the **October 30** meeting date but rejected the October 23 and November 25 dates.
The Chair opened the meeting to additional public comment. There was none, and the Chair adjourned the meeting at 4:30 p.m.